

Terrestrial Ecosystem Sciences

AmeriFlux Investigators Meeting
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U.S. DEPARTMENT OF
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AmeriFlux – A Historical Perspective

- AmeriFlux began in 1996 as a grass roots “coalition of the willing”
- United by a desire to coordinate research at flux sites to quantifying and understand the role of the terrestrial biosphere as a component of the Earth System (carbon, water and energy flux)
- Flux measurement funding from many sources (DOE, NOAA, USDA/USFS, NASA , NSF)
- DOE has a long history
 - supporting individual sites
 - providing coordination and integration to the network
- DOE needed a funding mechanism that was consistent with an ongoing network to provide ongoing support for the network





- In 2012 DOE acknowledged the need for a formalized management structure to support the long-term operations, data and logistics of the network
- DOE National Laboratories submitted proposals to manage the AmeriFlux Network
- Two major components:
 - Technical support, integration and coordination offered to all AmeriFlux investigators and sites
 - (Financial) operational support offered to a subset of sites based on:
 - Length and robustness of the data record
 - Geographic representation
- In July 2012 LBNL was selected to develop and lead the AmeriFlux Management Project

The AmeriFlux Network

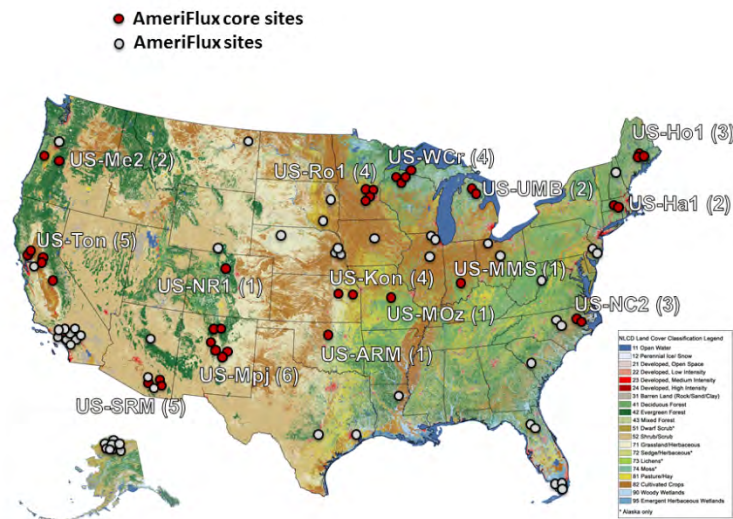
- 183 Sites in the AmeriFlux Network
- 106 sites have submitted data since 2010
 - 26 sites have joined or re-joined since 2012 (U.S., Canada, Panama, Mexico)

- New AmeriFlux Sites since 2012
- Existing AmeriFlux Sites (pre-2012)



AmeriFlux Core Sites

Long term, high quality data and study sites



AmeriFlux Core Sites provide high quality data and insights on ecosystem CO₂, water, and energy fluxes.

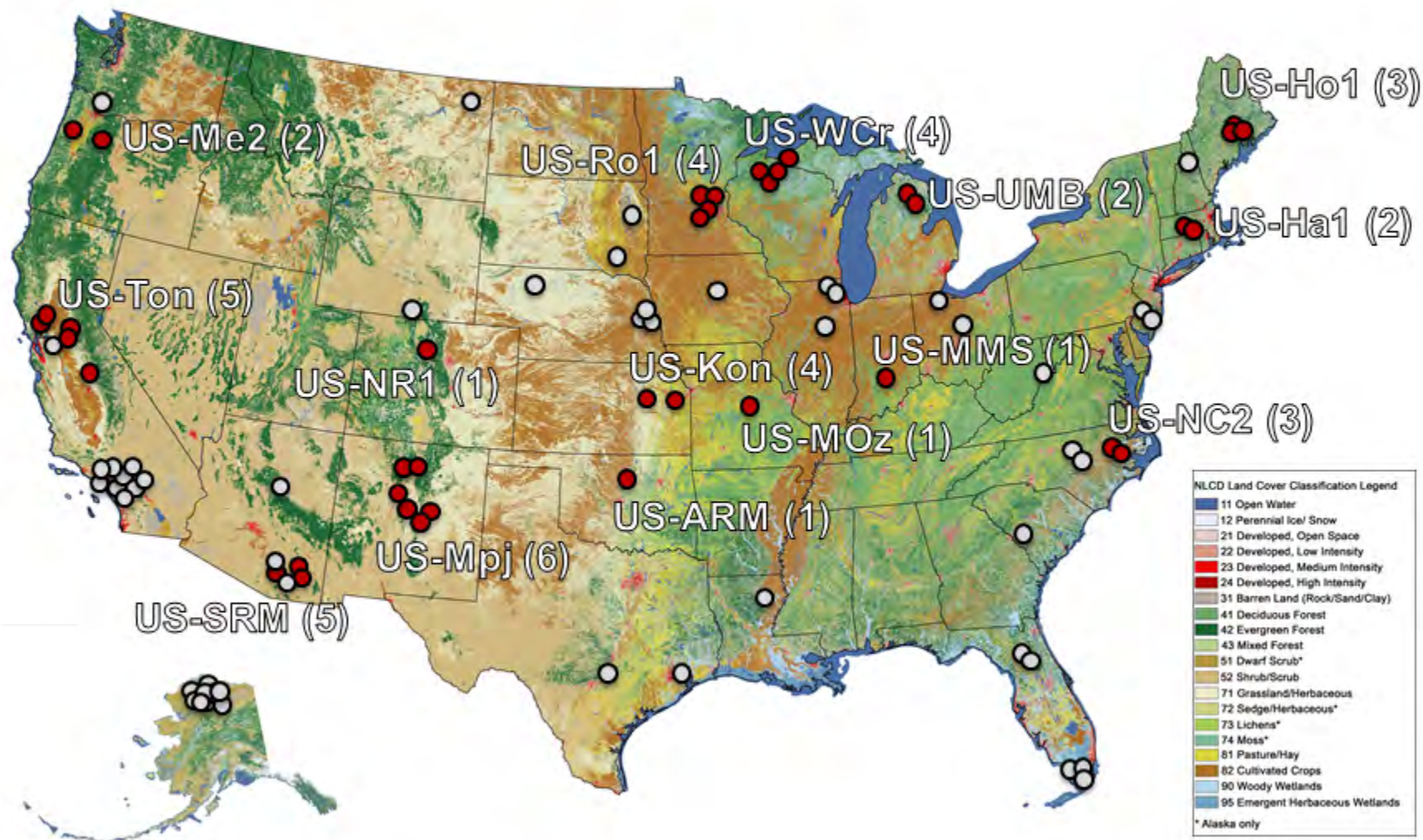
AMP Support:

- Contracts for operations
- Data managers' trainings*
- QA/QC intercomparisons, calibrations, loaners*
- Safety Training*
- Soon: end-to-end data processing and enhanced metadata searching*

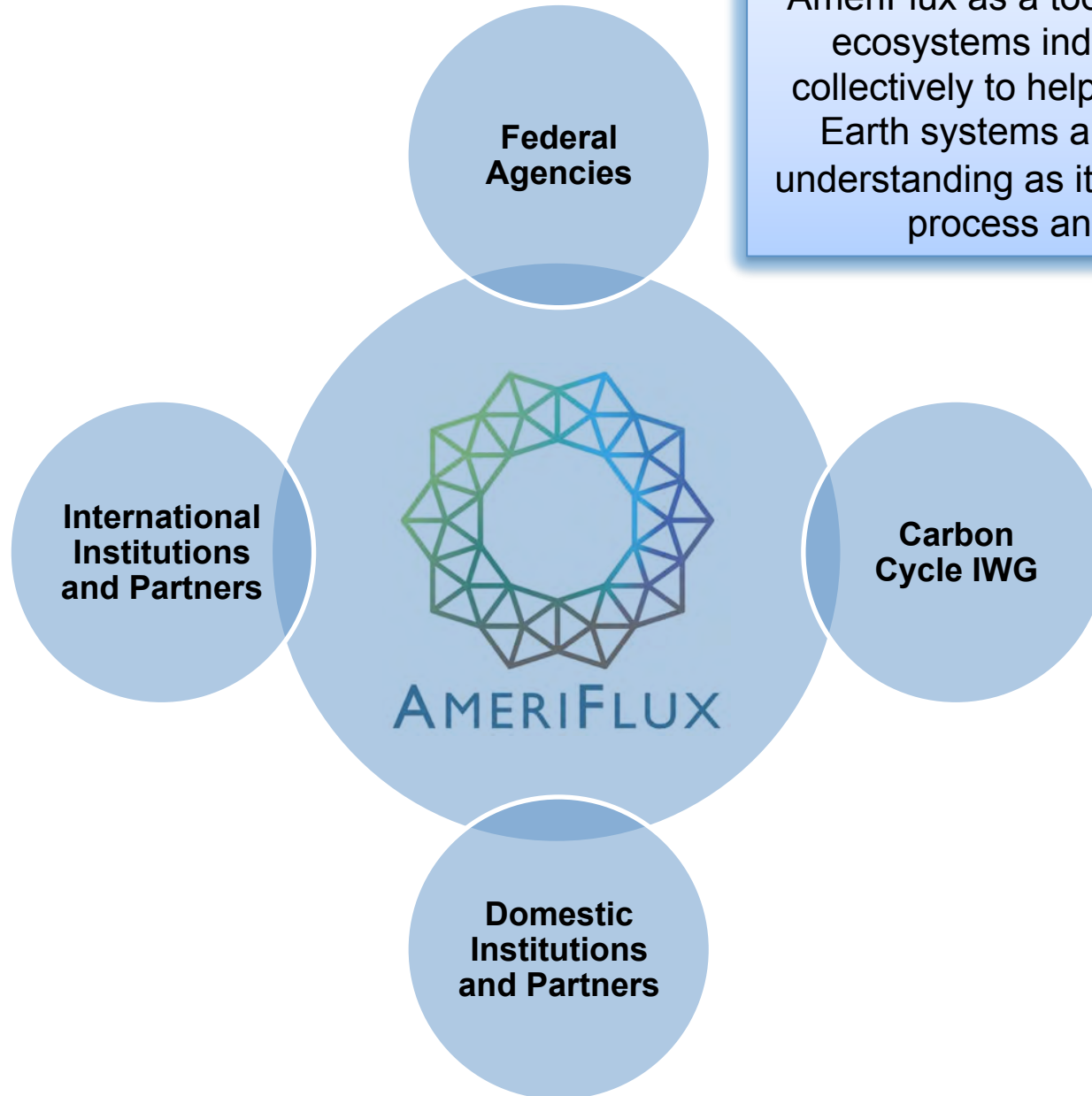
** Offered to whole network!*

The AmeriFlux Management Project is delivering 13 Core-Site Clusters (primary site plus 1-5 secondary sites) comprising 41 sites across gradients of climate, hydrology, vegetation disturbance, and management.

- AmeriFlux core sites
- AmeriFlux sites



AmeriFlux Network



DOE is excited by the value of AmeriFlux as a tool to understand ecosystems individually, and collectively to help us understand Earth systems and to test that understanding as its represented in process and ESM's

Terrestrial Ecosystem Science

Foundational science to improve our predictive understanding of terrestrial ecosystems in the context of a changing climate.

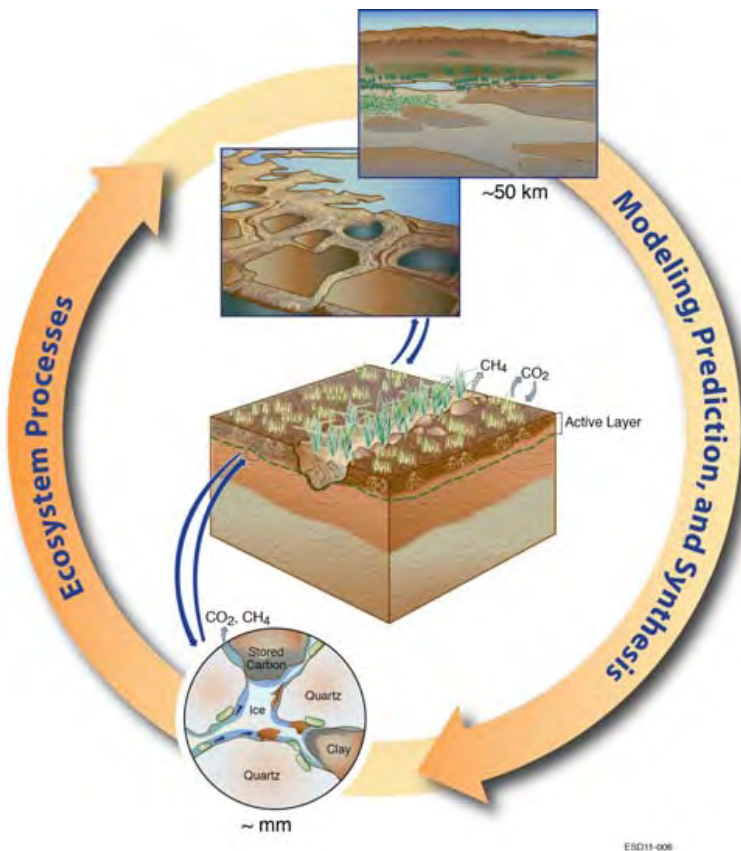
- Observations
- Manipulations
- Large-scale, long-term field studies
- Process modeling with ties to Earth-system models

Funding to both universities and national laboratories.



Model-Experimental Coupling (MODEX)

- DOE's goal is to: *To advance a robust predictive understanding of Earth's climate and environmental systems and to inform the development of sustainable solutions to the Nation's energy and environmental challenges.*



- “Predictive understanding” is code for MODEX.
- Our goal is to coordinate process and modeling science to maximize scientific outcomes.
- This is not a one-way street, it is an iterative dialog (*a “new” way to do business*).
- We recognize the importance of and role for “discovery science”.

ESD11-008

TES Program Update

- FY-12 annual university solicitation – \$3M/year
 - 200 pre-apps, 140 full applications, 11 awards
 - Highlighted: natural disturbances, belowground processes, coupled biogeochemical cycles and Arctic and tropical ecosystems
- FY-13 annual university solicitation – \$3M/year
 - 207 pre-apps, 121 full applications, 15 awards
 - Jointly supported with the DOE climate Modeling programs
- FY-14 GOAmazon university solicitation - \$2.3M/year (\$700k/year)
 - 33 LOI, 32 full applications, 6 awards
 - Jointly supported with ASR, RGCM, FAPEAM and FAPESP
- FY-14 NASA ROSES joint solicitation - \$5M
 - 10 awards
 - Jointly supported with NASA, USDA, and NOAA
- DOE Early Career solicitation
 - FY-10 (Nate McDowell, LANL)
 - FY-12 (Dan Hayes, ORNL)
 - FY-13 (Rebecca Newman, Univ of Washington)



TES Program Update

- Annual Solicitation for FY-15
 - Anticipated late spring/summer release
- SBIR/STTR
- Programs at National Labs – ANL, LBNL, ORNL, PNNL, LANL
 - Arctic soil carbon, SOM dynamics, SPRUCE, biogeochemistry, Southwestern drought
- Town Hall Meetings at AGU (12/14), and ESA (8/14)

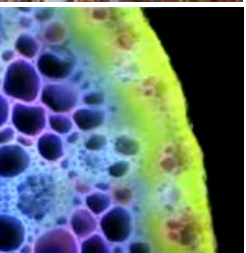
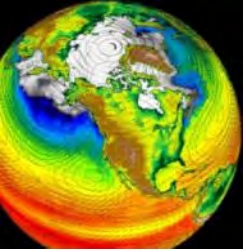


Looking Ahead and Strategic Plans

- Strategic Research Interests in:
 - Role of belowground processes in the carbon cycle
 - Support large-scale coupled modeling and process research projects as well as large-scale, long-term ecosystem studies
 - Arctic and tropical ecosystems and their feedbacks in a changing climate
 - Analyze long-term ecosystem observational records to inform and evaluate models
 - Encourage exploratory research (high risk-high payoff)
- Future directions
 - Terrestrial-aquatic interfaces
 - Natural-urban interfaces
- Connect projects closely to other research activities within CESD, within BER, and among the other Federal agencies.
- Forge strong programmatic coordination with the BER Scientific User Facilities (ARM, EMSL and JGI)
- Continuing long-term observations and research initiatives (e.g., AmeriFlux)

Final Words

- DOE is excited by the value of AmeriFlux as a tool to understand ecosystems individually, and collectively to help us understand Earth systems and to test that understanding as its represented in process and ESM's
- DOE recognizes the importance of the scientists who do this work and the other agencies that support it. We are excited by the opportunities to continue and expand this work.
- DOE is pleased to be able to support the network and appreciate the community's acceptance of our role.
- DOE partners with CCIWG to enable a major mechanism for interagency coordination - including AmeriFlux



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Questions?

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